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EXAMINER	
NGUYEN, HAI V	
ART UNIT	**PAPER NUMBER**
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/806,359	WAYE, PATRICK M.Y.
	Examiner	Art Unit
	Hai V. Nguyen	2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to ~~communication~~ application(s) filed on 23 March 2004.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-23 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-23 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 23 March 2004 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 7/21/04; 10/14/05.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the application filed on 23 March 2004.

2. Claims 1-23 are presented for examination.

Information Disclosure Statement

3. The information disclosure statement with regarding the reference JP-2002190755 filed on 14 October 2005 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Drawings

4. The drawings 1-5 are objected to under 37 CFR 1.84(o) because they lack suitable descriptive legends, for example, the element numbers 27, 30, 40. 90 in figures 1-4 and numbers 510. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the

drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

6. The abstract contains more than 150 words.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Rose** US patent # **6,195,561 B1** in view of **Sohner** et al. US patent # **5,187,803**.

9. As to claim 1, Rose discloses a radio frequency communication system for communicating signals, said system comprising:

a radiating transmission line *(Fig. 1, radiating cable line 34 or 36; branches 46, 48, 50, 52; Fig. 2, branches 46, 48, 50, 52)* having a first end *(Fig. 1, element 32)* and a second end *(Fig. 2, element terminator 74, or 76)*; a base station *(Fig. 1, element 30)* coupled to the first end, said base station comprising a base receiver *(Fig. 1, element 30a)* for receiving a first communication signal *(Fig. 4, a transmit signal)* at a first frequency *a (a transmit RF frequency)* from the first end *(Fig. 3, col. 7, line 63 – col. 8, line 22)*;

at least two amplification units *(Fig. 1, elements 60)* coupled to said transmission line at periodic locations for amplifying the first communication signal at the first frequency from previous amplification units in an upstream direction *(a receive path)* towards the first end *(Fig. 3, col. 7, line 63 – col. 8, line 31)*, and

However Rose does not explicitly disclose said at least two amplification units *(cascade bi-directional amplifiers)* having degradation detection units (for detecting a degradation in the communication system between the at least two amplification units; and wherein upon detection of a degradation in the communication system between any two amplification units, the amplification units detecting the degradation change the frequency of the first communication signal along the radiating transmission line between the two amplification units having detected the degradation from the first

frequency to a predetermined first fault frequency to facilitate overcoming the degradation in the communication system.

Sohner discloses said at least two amplification units *(Sohner, Abstract, cascade amplifier stages)* having degradation detection units *(Sohner, Fig. 4, pilot detection circuits, col. 10, line 43 – col. 11, line 8; col. 11, line 45 – col. 12, line 7)* for detecting a degradation in the communication system between the at least two amplification units; and wherein upon detection of a degradation in the communication system between any two amplification units, the amplification units detecting the degradation change *(the co-axial loss of cable)* the frequency of the first communication signal along the radiating transmission line between the two amplification units having detected the degradation from the first frequency to a predetermined first fault frequency *(a pilot frequency or an IF frequency)* to facilitate overcoming the degradation in the communication system *(Sohner, col. 8, lines 16-67)*.

Accordingly, it would have been obvious to one of ordinary skill in the networking art at the time of the invention was made to have incorporated Sohner's teachings of detecting the co-axial loss of cable with the teachings of Rose, for the purpose of overcoming *the degradation change in frequency in radiating cable and retaining a sufficiently high signal levels for the receiving mobile units (Sohner, col. 8, lines 16-22)*.

10. As to claim 2, Rose-Sohner discloses the radio frequency communication system wherein, different from any other frequency in the communication system between the two amplification units having detected the degradation *(Sohner, the RF frequencies are different from the pilot and IF frequencies, col. 7, lines 10-46)*.

11. As to claim 3, Rose-Sohner discloses wherein the first fault frequency is selected to facilitate radiation of the first communication signal from a first portion of the radiating transmission line located downstream of the degradation to a second portion of the radiating transmission line located upstream of the degradation *(Sohner, Fig. 4, col. 10, lines 43-63)*.

12. As to claim 4, Rose-Sohner discloses each amplification unit comprises:

a downstream connection for connecting a length of the transmission line in a downstream direction towards the second end of the transmission line, and, an upstream connection for connecting a length of the transmission line in the upstream direction towards the first end *(Rose, Figs. 1, 2, two-way underground communication, Abstract)*; and

wherein, upon detection of a degradation in the length of the transmission line at the downstream connection, the amplification unit commences to receive the first communication signal at the predetermined first fault frequency and upon no detection of a degradation in the length of the transmission line at the upstream connection, the amplification unit transmits the first communication signal at the first frequency *(Sohner, Fig. 4, col. 10, line 17- col. 11, line 16)*.

13. As to claim 5, Rose-Sohner discloses each amplification unit comprises:

a downstream connection for connecting a length of the transmission line in a downstream direction towards the second end of the transmission line, and, an upstream connection for connecting a length of the transmission line in the upstream direction towards the first end *(Rose, Figs. 1, 2, two-way underground communication,*

Abstract); and

wherein upon detection of a degradation in the length of the transmission line at the upstream connection, the amplification unit commences to transmit the first communication signal at the predetermined first fault frequency and increases a power level of the first communication signal to facilitate radiation of the first communication signal from a first portion of the radiating transmission line downstream of the degradation to be received by a second portion of the radiating transmission line upstream of the degradation *(Sohner, Fig. 3, col. 8, lines 5-50; Fig. 4, col. 10, line 17-col. 11, line 16).*

14. As to claim 6, Rose-Sohner discloses said base station *(Rose, Fig. 1, element 30)* comprises a base transmitter *(Rose, Fig. 1, element 30a)* for transmitting a second communication signal at a second frequency into the first end *(Rose, Fig. 1, element 32)*; wherein said at least two amplification units *(Rose, Fig. 1, elements 60)* coupled to said transmission line at periodic locations amplify the second communication signal at the second frequency from previous amplification units in a downstream direction towards the second end of the transmission line *(Rose, Fig. 1)*;

wherein upon detection of a degradation in the communication system between any two amplification units, the amplification units detecting the degradation change the frequency of the second communication signal from the second frequency to a predetermined second fault frequency *(Sohner, a pilot frequency or an IF, col. 8, lines 15-22)* along the radiating transmission line between the two amplification units having detected the degradation to overcome the degradation in the communication system

(Sohner, Fig. 3, col. 8, lines 5-67; Fig. 4, col. 10, line 17- col. 11, line 16); and wherein the second fault frequency differs from any other frequency in the communication system *(Sohner, the RF frequencies are different from the pilot and IF frequencies, col. 7, lines 10-46).*

15. As to claim 7, Rose-Sohner discloses the first fault frequency is lower than the first frequency and the second fault frequency is lower than the second frequency *(Sohner, Fig. 5, the 5 MHz pilot frequency lower than the RF frequency of 160MHz or 80 MHz).*

16. As to claim 8, Rose-Sohner discloses the second fault frequency is selected to facilitate radiation of the second communication signal from a first portion of the radiating transmission line located upstream of the degradation to a second portion of the radiating transmission line located downstream of the degradation *(Sohner, Fig. 3, col. 8, lines 5-67; Fig. 4, col. 10, line 17- col. 11, line 16).*

17. As to claim 9, Rose-Sohner discloses the degradation detection units detect a degradation in the communication system by detecting a decreased power level in the first communication signal for a predetermined time period *(Sohner, col. 11, lines 45-53).*

18. As to claim 10, Rose-Sohner discloses wherein the degradation detection units *(Sohner, pilot detection circuits)* detect a degradation in the communication system by detecting a decreased power level in either the first communication signal or the second communication signal for a predetermined time period *(Sohner, col. 11, lines 45-53).*

19. As to claim 11, Rose-Sohner discloses wherein each amplification unit comprises:

a downstream degradation detection unit for detecting a degradation in the length of the transmission line at the downstream connection by detecting a decreased power level of a DC current received from the length of the transmission line connected in the downstream connection for a predetermined period of time *(Sohner, Fig. 3, col. 8, lines 5-67; Fig. 4, col. 10, line 17- col. 11, line 16; col. 11, lines 45-53; col. 12, lines 58-67)*;

and wherein after the predetermined time period, the downstream degradation detection unit sends a switch signal to a fault switch causing the amplification unit to commence to receive the first communication signal at the predetermined first fault frequency *(Sohner, col. 14, lines 8-49; col. 15, lines 20-26, lines 40-48)*.

20. As to claim 12, Rose-Sohner discloses, wherein the predetermined first fault frequency differs from any other frequency in the communication system; and wherein the degradation detection unit detects degradation in the communication system by detecting transmission of any communication signal at the predetermined first fault frequency *(Sohner, col. 14, lines 8-49; col. 15, lines 20-26, lines 40-48)*.

21. As to claim 13, Rose-Sohner discloses a branching radiating transmission line having a first end, a second end and a branching unit for electrically coupling the first end of the branching radiating transmission line to the radiating transmission line, such that the first communication signals may pass to and from the branching radiating transmission line to the radiating transmission line either at the first frequency of the first fault frequency *(Rose, Figures 1, 2, branching lines 46, 48, 50, 52)*.

22. As to claim 14, Rose-Sohner discloses wherein a substantial part of the radiating transmission line is located below ground and the second end of the radiating transmission line is located remotely from the first end of the radiating transmission line *(Rose, Figures 1, 2)*.

23. As to claim 15, Rose-Sohner discloses wherein the base station is above ground and the communication system is used to facilitate communication in a mine *(Rose, Figures 1, 2)*.

24. As to claim 16, Rose discloses in a radio frequency communication system for communicating communication signals *(transceiver signals)* on a radiating transmission line, said radiating transmission line having a first end and a second end located remotely from the first end, said first end coupled to a base station comprising a base receiver for receiving a first communication signal at a first frequency from the first end, an amplification unit for facilitating communication of the communication signals *(Rose, Figures 1, 2)*, said amplification unit comprising:

a downstream connection *(Rose, transmit signal paths)* for connecting a length of the transmission line in a downstream direction towards the second end of the transmission line; an upstream connection *(receiver signal paths)* for connecting a length of the transmission line in an upstream direction towards the first end;

an amplifier *(Rose, inline amplifiers 30)* for amplifying the first communication signal *(Rose, transmit signal)* in a direction towards the first end;

However Rose does not explicitly disclose a degradation detection unit for detecting a degradation in the communication signal in the length of the transmission

line at the upstream connection; wherein upon detection of a degradation in the length of the transmission line in the upstream connection, the amplification unit commences to amplify and transmit the first communication signal at a predetermined first fault frequency and upon no detection of a degradation in the length of the transmission line at the downstream connection, the amplification unit continues to receive the first communication signal at the downstream connection at the first frequency.

Sohner discloses said a degradation detection unit *(Sohner, Fig. 4, pilot detection circuits, col. 10, line 43 – col. 11, line 8; col. 11, line 45 – col. 12, line 7)* for detecting a degradation in the communication signal in the length of the transmission line at the upstream connection *(Sohner, receive path)*; wherein upon detection of a degradation in the length of the transmission line in the upstream connection, the amplification unit *(Sohner, the bi-directional amplifier)* commences to amplify and transmit the first communication signal at a predetermined first fault frequency *(Sohner, a pilot frequency or IF frequency)* and upon no detection of a degradation in the length of the transmission line *(an amplifier stage)* at the downstream connection *(Sohner, transmit path)*, the amplification unit continues to receive the first communication signal at the downstream connection at the first frequency.

Accordingly, it would have been obvious to one of ordinary skill in the networking art at the time of the invention was made to have incorporated Sohner's teachings of detecting the co-axial loss of cable with the teachings of Rose, for the purpose of overcoming *the degradation change in frequency in radiating cable and retaining a sufficiently high signal levels for the receiving mobile units (Sohner, col. 8, lines 16-22).*

25. As to claim 17, Rose-Sohner discloses wherein the degradation detection unit detects degradations in the length of the transmission line at the downstream connection; and wherein upon detection of a degradation in the downstream connection, the amplification unit commences to receive the first communication signal at the downstream connection at the predetermined first fault frequency *(Sohner, Fig. 3, col. 8, lines 5-67; Fig. 4, col. 10, line 17- col. 11, line 16; col. 11, lines 45-53; col. 12, lines 58-67)*.

26. As to claim 18, Rose-Sohner discloses wherein the first fault frequency is different from any other frequency in the communication system along the length of the transmission line over which the degradation has been detected *(Sohner, the original RF frequencies are different from the pilot and IF frequencies, col. 7, lines 10-46)*.

27. As to claim 19, Rose-Sohner discloses wherein the first fault frequency is selected to facilitate radiation of the first communication signal from a first portion of the radiating transmission line, located between the amplification unit and the location of the degradation, and, a second portion of the radiating transmission line, located between the degradation and another amplification unit in the communication system *(Sohner, Fig. 3, col. 8, lines 5-67; Fig. 4, col. 10, line 17- col. 11, line 16; col. 11, lines 45-53; col. 12, lines 58-67)*.

28. As to claim 20, Rose discloses a method for communicating communication signals utilizing a radiating transmission line *(Rose, a radiating cable line)* having at least two amplification units coupled to the transmission line at periodic locations for amplifying communication signals along the radiating transmission line.

However, Rose does not explicitly disclose detecting a degradation in the communication signal along a link of the radiation transmission line between any two amplification units coupled to the radiating transmission line and at each of the two amplification units detecting a degradation in the communication system, altering a frequency of the communication signal along the length of the transmission line between the two amplification units having detected the degradation from a first frequency, used when no degradation is detected, to a predetermined first fault frequency different from the first frequency.

Sohner discloses detecting a degradation in the communication signal along a link of the radiation transmission line *(Sohner, an amplifier stage)* between any two amplification units coupled to the radiating transmission line *(Sohner, Fig. 3, col. 8, lines 5-16; Fig. 4, col. 10, line 17- col. 11, line 16; col. 11, lines 45-53; col. 12, lines 58-67)*; and at each of the two amplification units detecting a degradation in the communication system, altering a frequency of the communication signal along the length of the transmission line between the two amplification units having detected the degradation from a first frequency, used when no degradation is detected, to a predetermined first fault frequency different from the first frequency *(Sohner, Fig. 3, col. 8, lines 5-67; Fig. 4, col. 10, line 17- col. 11, line 16; col. 11, lines 45-53; col. 12, lines 58-67)*.

Accordingly, it would have been obvious to one of ordinary skill in the networking art at the time of the invention was made to have incorporated Sohner's teachings of detecting the co-axial loss of cable with the teachings of Rose, for the purpose of

overcoming *the degradation change in frequency in radiating cable and retaining a sufficiently high signal levels for the receiving mobile units (Sohner, col. 8, lines 16-22).*

29. As to claim 21, Rose-Sohner discloses wherein the first fault frequency is selected to facilitate radiation of the communication signals from a first portion of the length of the transmission line downstream of the degradation to a second portion of the length of the transmission line upstream of the degradation unit *(Sohner, col. 8, lines 16-22; col. 13, lines 39-49).*

30. As to claim 22, Rose-Sohner discloses a first downstream filter *(Sohner, Fig. 4, elements 40, 86, 81)* for filtering communication signals at the first frequency;

a first downstream fault filter *(Sohner, Fig. 4, elements 81A, 82)* for filtering communication signals at the first fault frequency;

a switch *(Sohner, Fig. 4, SCANDA interface)* for switching the first communication signals to the first downstream filter or the first downstream fault filter; and

wherein upon the degradation unit *(Sohner, Fig. 4, detection circuit element 97, 107, 109)* detecting a degradation *(the co-axial loss of cable)* the first communication signal in the length of the transmission at the downstream connection, the switch switches the first communication signal from the first downstream filter to the first downstream fault filter *(Sohner, col. 13, lines 25-33).*

31. As to claim 23, Rose-Sohner discloses a first upstream filter for filtering communication signals at the first frequency;

a first upstream fault filter *(Sohner, Fig. 4, elements 492, 93)* for filtering communication signals at the first fault frequency;

a switch *(Sohner, Fig. 4, SCANDA interface)* for switching the first communication signals to the first upstream filter or the first upstream fault filter; and wherein upon detection of a degradation in the first communication signal in the length of the transmission line at the upstream connection, the switch switches the first communication signal after amplification at the first upstream fault frequency from the first upstream filter to the first upstream fault filter *(Sohner, col. 13, lines 25-33)*.

32. Further references of interest are cited on Form PTO-892, which is an attachment to this action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai V. Nguyen whose telephone number is 571-272-3901. The examiner can normally be reached on 6:00-3:30 Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Anderson can be reached on 571-272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hai V. Nguyen
Examiner
Art Unit 2618

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SUPERVISORY PATENT EXAMINER